

L Number	Hits	Search Text	DB	Time stamp
1	19	5049857.uref.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 15:38
2	2974	340/572.1,572.2,571,572.4,572.7,551,552,561	USPAT;572.9. US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 15:40
3	313	340/572.1,572.2,571,572.4,572.7,551,552,561 and (multiple\$1 oe several or plurality\$1) near5 (tag\$1)	USPAT;572.9. US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 15:41
4	311	340/572.1,572.2,571,572.4,572.7,551,552,561 and (multiple\$1 or several\$2 or plurality\$2) near5 (tag\$1)	USPAT;572.9. US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 16:13
5	1	tag\$1 and detection\$1 near5 zone\$1 and surveillance\$1 and pertubation\$1 and (adjust\$3 or var\$4)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 16:17
6	1	tag\$1 and detection\$1 near5 zone\$1 and pertubation\$1 and (adjust\$3 or var\$4) and (antenna\$1 or coil\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 16:21
7	473	tag\$1 and detection\$1 near5 zone\$1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 16:21
8	103	340/572.1,572.2,571,572.4,572.7,551,552,561 and (tag\$1 and detection\$1 near5 zone\$1)	USPAT;572.9. US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 16:53
9	154	detection\$1 near5 zone\$1 and electromagnetic\$1 near5 field\$1 and (tag\$1 or article\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 16:54
10	24	(detection\$1 near5 zone\$1 and electromagnetic\$1 near5 field\$1 and (tag\$1 or article\$1)) and field\$1 near5 generator\$1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 16:54
11	22	((detection\$1 near5 zone\$1 and electromagnetic\$1 near5 field\$1 and (tag\$1 or article\$1)) and field\$1 near5 generator\$1) and (antenna\$1 or coil\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 17:00
12	9	detect\$4 near5 (multi\$1 or several\$1 or plurality\$1 or multiple\$1) near5 tag\$1 near5 zone\$1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 17:10

L Number	Hits	Search Text	DB	Time stamp
1	15	5406262.uref.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPÄT	2003/02/06 12:24
2	7	((("3747086") or ("4510490") or ("4654641") or ("4727360") or ("4779076") or ("4791412") or ("5049857"))).PN.	USPAT	2003/02/06 12:29
3	134	(electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 tag\$1 and zone\$1	USPAT	2003/02/06 12:37
4	8	((electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 tag\$1 and zone\$1) and abut\$4	USPAT	2003/02/06 12:31
5	0	(electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 invers\$4 near5 proportion\$1 near5 each\$1other\$1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPÄT;	2003/02/06 12:39
6	0	(electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 (invers\$4 or opposit\$4) near5 (each\$1 near5 other\$1 or each\$1other\$1)	US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPÄT;	2003/02/06 12:41
7	4	(electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 (invers\$4 or opposit\$4) and (each\$1 near5 other\$1 or each\$1other\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPÄT;	2003/02/06 12:44
8	18389	(electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 (invers\$4 or opposit\$4 or advers\$4 or oppos\$5)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPÄT;	2003/02/06 12:46
9	211	((electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 (invers\$4 or opposit\$4 or advers\$4 or oppos\$5)) and tag\$1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPÄT;	2003/02/06 12:46
10	86	((electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 (invers\$4 or opposit\$4 or advers\$4 or oppos\$5)) and tag\$1) and zone\$1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPÄT;	2003/02/06 13:37
11	54	((electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 (invers\$4 or opposit\$4 or advers\$4 or oppos\$5)) and tag\$1) and zone\$1) and adjust\$4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/06 14:23

L Number	Hits	Search Text	DB	Time stamp
1	32	(electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 (var\$4 or adjust\$4) near5 inverse\$1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 22:06
2	0	(plurality\$2 or multi\$3) near5 (electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 (var\$4 or adjust\$4) near5 inverse\$1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 22:07
3	20	(plurality\$2 or multi\$3) and (electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1) near5 (var\$4 or adjust\$4) near5 inverse\$1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 22:09
4	98740	250/\$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 22:09
5	6537	250/\$.ccls. and (electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 22:13
6	5	(250/\$.ccls. and (electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1)) and (tag\$1 and detection\$1 near5 zone\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 22:11
7	226	250/\$.ccls. and (plurality\$3 or multi\$3) near5 (electromagnetic\$1 near5 field\$1 or magnetic\$1 near5 field\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 22:32

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1	5348	(var\$4 or chang\$4 or modif\$4 or alternat\$4) near5 (electromagnetic\$1 near5 field\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 18:33
2	6	((var\$4 or chang\$4 or modif\$4 or alternat\$4) near5 (electromagnetic\$1 near5 field\$1)) and ((detect\$4) near5 (multi\$4 or plurality\$3) near5 (tag\$1))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 18:35
3	1545	(adjust\$4 or set\$4) near5 (electromagnetic\$1 near5 field\$1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 18:34
4	3	((adjust\$4 or set\$4) near5 (electromagnetic\$1 near5 field\$1)) and ((detect\$4) near5 (multi\$4 or plurality\$3) near5 (tag\$1))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/02/05 18:37

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GLOSSARY

Aurora

a glow in the sky, often observed in a ring-shaped region around the magnetic poles ("auroral zone") and occasionally further equatorward. The name comes from an older one, "aurora borealis," Latin for "northern dawn," given because an aurora near the northern horizon (its usual location when seen in most of Europe) looks like the glow of the sky preceding sunrise. Also known as "northern lights," although it occurs both north and south of the equator. The aurora is generally caused by fast electrons from space, guided earthward by magnetic field lines, and its light comes from collisions between such electrons and the atoms of the upper atmosphere, typically 100 km (60 miles) above ground.

Auroral oval

the region in which aurora appears at the same time, corresponding to the "ring of fire" around the magnetic pole, often observed by satellite cameras. It resembles a circle centered a few hundred kilometers northward of the magnetic pole, and its size varies with magnetic activity. During large magnetic storms it expands greatly, making auroras visible at regions far from the pole, where they are a rare occurrence.

Auroral Zone

the region on Earth where auroras are common—a smeared-out average (over time and distance from the magnetic pole) of the auroral oval. Typical magnetic latitude is 63-65 degrees. Barium release—the firing from a rocket or spacecraft above the atmosphere of a charge of barium, evaporated by a thermite process. Usually produced shortly after sunset, when the sky is already dark but sunlight still reaches the high altitude where the release occurs. The barium atoms are released as a vapor, they spread rapidly and are readily ionized by sunlight. The ion cloud then moves with the local plasma and is therefore a useful tracer of plasma flows.

Boundary Layer

a transition layer between two neighboring regions in the magnetosphere. The plasma sheet boundary layer (PSBL) is the transition from the plasma sheet and the tail lobes. The low latitude boundary layer (LLBL), just inside the magnetopause, is the transition between the equatorial magnetosphere and the solar wind (more accurately, the magnetosheath, solar wind slowed down by passage through the bow shock).

Bow Shock

a sharp front formed in the solar wind ahead of the magnetosphere, marked by a sudden slowing-down of the flow near Earth. It is quite similar to the shock forming ahead of the wing of a supersonic airplane. After passing near Earth, the slowed-down flow gains speed again, to the same value as the surrounding solar wind.

Corona

see [solar corona](#).

Coronal Mass Ejection

a huge cloud of hot plasma, occasionally expelled from the Sun. It may accelerate ions and electrons and may travel through interplanetary space as far as the Earth's orbit and beyond it, often preceded by a shock front. When the shock reaches Earth, a magnetic storm may result.

Cusps

(of the magnetosphere)——two regions of weak magnetic field, on the sunward boundary of the magnetosphere, one on each side of the equator. They separate magnetic field lines closing on the front from those swept into the Earth's magnetotail.

Electric Charge

that which causes electrons and ions to attract each other, and to repel particles of the same kind. The electric charge of electrons is called "negative" (-) and that of ions "positive" (+). Materials such as glass, fur and cloth acquire an electric charge by rubbing against each other, a process which tears electrons off one substance and attaches it to the other. Electric charges (+) and (-) may also be separated by a chemical process, as in an electric battery. About Ben Franklin's role in studying and naming electrical charges, [click here](#).

Electromagnetic Field

the regions of space near electric currents, magnets, broadcasting antennas etc., regions in which electric and magnetic forces may act. Generally the EM field is regarded as a modification of space itself, enabling it to store and transmit energy.

Electron

a lightweight particle, carrying a negative electric charge and found in all atoms. Electrons can be energized or even torn from atoms by light and by collisions, and they are responsible for many electric phenomena in solid matter and in plasmas. (About the discovery of the electron in 1897, [click here](#)).

Energetic Particles

charged atomic particles moving rapidly, often at a significant fraction of the speed of light. They can penetrate matter, ionize the material which they traverse and emit energetic photons (e.g. of x-rays). See also [radiation belt](#) and [solar energetic particles](#).

Energy

loosely, anything that can cause a machine to move. For example, energy is contained in moving water, water raised to a high place, heat or magnetic fields. The energy of fast ions and electrons (measured in "electron volts") is a measure of their speed, and it enables them (for instance) to penetrate matter.

Frequency

the number of back-and-forth cycles per second, in a wave or wave-like process. Expressed this way, the frequency is said to be given in units of Hertz (Hz), named after the scientist who first produced and observed radio waves in the lab. Alternating current in homes in the US goes through 60 cycles each second, hence its frequency is 60 Hz; in Europe it is 50 cycles

and 50 Hz.

Flare

see [solar flare](#)

Interplanetary Magnetic Field (IMF)

the weak magnetic field filling interplanetary space, with field lines usually connected to the Sun. The IMF is kept out of most of the Earth's magnetosphere, but the interaction of the two plays a major role in the flow of energy from the solar wind to the Earth's environment.

Geomagnetic Storm

A large-scale disturbance of the magnetosphere, often initiated by the arrival of an interplanetary shock originating at the Sun. A magnetic storm is marked by the injection of an appreciable number of ions from the magnetotail into the ring current, a process accompanied by increased auroral displays. The strengthened ring current causes a world-wide drop in the equatorial magnetic field, taking perhaps 12 hours to reach its greatest intensity, followed by a more gradual recovery.

Geostationary Orbit

a circular orbit around the Earth's equator, at a distance of 6.6 Earth radii. At this distance the orbital period is 24 hours, keeping the satellite "anchored" above the same spot on Earth. This feature makes the synchronous orbit useful for communication satellites: a satellite transmitting TV programs to the US, for instance, will always be in touch with the US if "anchored" above it, and receiving antennas on the ground only need to point to one fixed spot in the sky.

Ion

usually, an atom from which one or more electrons have been torn off, leaving a positively charged particle. "Negative ions" are atoms which have acquired one or more extra electrons, and clusters of atoms can also become ions.

Ionosphere

a region covering the highest layers in the Earth's atmosphere, containing an appreciable population of ions and free electrons. The ions are created by sunlight ranging from the ultra-violet to x-rays. In the lowest and least rarefied layer of the ionosphere, the D-layer (around 70 km or 45 miles), as soon as the Sun sets the ions and electrons recombine, but in the higher layers, collisions are so few that its ion layers last throughout the night

Magnetic Field

a region in which magnetic forces can be observed. See "[electromagnetic field](#)," a more general field also including electric forces.

Magnetic Field Lines

lines in space, used for visually representing magnetic fields. At any point in space, the local field line points in the direction of the magnetic force which an isolated magnetic pole at that point would experience. In a plasma, magnetic field lines also guide the motion of ions and electrons, and direct the flow of some electric currents.

Magnetometer

an instrument for measuring magnetic fields. Spacecraft often carry fluxgate

magnetometers, which measure components of the magnetic field (3 of them are combined to give its strength and direction) but they need to be calibrated. Rubidium-vapor and similar instruments measure only the field strength, but their reading is absolute, related to atomic constants.

Magnetopause

the boundary of the magnetosphere, separating plasma attached to Earth from the one flowing with the solar wind.

Magnetosheath

the region between the magnetopause and the bow shock, containing solar wind which has been slowed down by passage through the bow shock. As the magnetosheath plasma streams away from the bow shock, it gradually regains its former velocity.

Magnetosphere

The region around Earth, bounded by the magnetopause, whose processes are dominated by the Earth's magnetic field.

Magnetotail

The long stretched-out nightside of the magnetosphere, the region in which substorms begin. It starts about 8 Earth radii (RE) nightward of the Earth and has been observed to distances of at least 220 RE. See [plasma sheet](#), tail lobes.

Northern Lights

an name for the aurora occurring over the North Pole.

Orbit

the line followed by a spacecraft or a celestial body. See Sun synchronous orbit.

Particle

in general, a charged component of an atom, that is, an ion or electron.

Plasma

a gas containing free ions and electrons, and therefore capable of conducting electric currents. A "partially ionized plasma" such as the Earth's ionosphere is one that also contains neutral atoms.

Plasma Sheet

a near-equatorial layer of denser plasma in the tail of the Earth's magnetosphere. It separates the two tail lobes, the two bundles of magnetic field lines connected to the regions around the Earth's magnetic poles.

Plasmasphere

a region of relatively dense but cool plasma, surrounding Earth, extending to distances of about 5 Earth radii (RE). The plasmasphere is the upward extension of the Earth's ionosphere, getting less and less dense with increasing distance, and it shares the Earth's rotation.

Polar Caps

in magnetospheric usage, the regions around the Earth's magnetic poles, inside the auroral oval. The field lines in these regions extend into the tail lobes of the Earth; they reach great distances and do not close in the magnetosphere.

Polar Orbit

a satellite orbit passing over both poles of the Earth. During a 12-hour day, a satellite in such an orbit can observe all points on Earth.

Proton

an ion of hydrogen and one of the fundamental building blocks from which atomic nuclei are made.

Radiation

a term with two broad meanings:

1. In the narrow sense, some type of electromagnetic wave: radio, microwave, light (infra-red, visible or ultra-violet), x-rays or gamma rays are all types of radiation.
2. Colloquially, the full term is "ionizing radiation" and means any spreading emission which can penetrate matter and ionize its atoms. That includes x-rays and gamma rays, but also high-energy ions and electrons emitted by radioactive substances, accelerated by laboratory devices or encountered in space (e.g. the "radiation belt" and "cosmic rays," also known as the "cosmic radiation").

Radiation Belt

The region of high-energy particles trapped in the Earth's magnetic field.

Solar Corona

the outermost layer of the Sun's atmosphere, visible to the eye during a total solar eclipse; it can also be observed through special filters and best of all, by X-ray cameras aboard satellites. The corona is very hot, up to 1-1.5 million degrees centigrade, and is the source of the solar wind

Solar Energetic Particles

high energy particles occasionally emitted from active areas on the Sun, associated with solar flares and coronal mass ejections. The Earth's magnetic field keeps them out of regions close to Earth (except for the polar caps) but they can pose a hazard to space travelers far from Earth.

Solar Flare

a rapid outburst on the Sun, usually in the vicinity of active sunspots. A sudden brightening (only rarely seen without special filters) may be followed by the signatures of particle acceleration to high energies—x-rays, radio noise and often, a bit later, the arrival of high-energy ions from the Sun.

Solar Wind

hot solar plasma spreading from the solar corona in all directions, at a typical speed of 300-700 km/sec. It is caused by the great heat of the corona.

Space Weather

the popular name for energy-releasing phenomena in the magnetosphere, associated with magnetic storms, substorms and interplanetary shocks.

Substorm

a process by which plasma in the magnetotail becomes energized at a fast rate, flowing earthward and producing bright auroras and large Birkeland currents, for typical durations of half an hour.

Sun

the star at the center of our solar system. The Sun keeps Earth warm and sustains life on it, and it also emits the solar wind and occasional bursts of solar energetic particles.

Sunspot

An intensely magnetic area on the Sun's visible face. For unclear reasons, it is slightly cooler than the surrounding photosphere (perhaps because the magnetic field somehow interferes with the outflow of solar heat in that region) and therefore appears a bit darker. Sunspots tend to be associated with violent solar outbursts of various kinds.

Sunspot Cycle (or solar cycle)

an irregular cycle, averaging about 11 years in length, during which the number of sunspots (and of their associated outbursts) rises and then drops again. Like the sunspots, the cycle is probably magnetic in nature, and the polar magnetic field of the Sun also reverses each solar cycle.

Synchronous Orbit

a circular orbit around the Earth's equator, at a distance of 6.6 Earth radii. At this distance the orbital period is 24 hours, keeping the satellite "anchored" above the same spot on Earth. This feature makes the synchronous orbit useful for communication satellites: a satellite transmitting TV programs to the US, for instance, will always be in touch with the US if "anchored" above it, and receiving antennas on the ground only need to point to one fixed spot in the sky.

Ultraviolet (UV)

electromagnetic radiation resembling visible light, but of shorter wavelength. UV cannot be seen by the eye, and much of it is absorbed by ozone, a variant of oxygen, at altitudes of 30-40 km. Satellite telescopes, however, can and do view stars and the Sun in UV, and even in the extreme UV (EUV), the range between UV and X-rays.

Voltage


a sort of "electric pressure," gauging the electric force acting on ions or electrons (or more accurately, the amount of energy they might obtain from that force). In electric devices such as are used in the home, increasing the voltage increases the current—just as increasing the pressure driving water through a pipe increases its flow rate. (The scientific term is "potential" or "potential difference".)

X-rays


electromagnetic waves of short wavelength, capable of penetrating some thickness of matter. Medical x-rays are produced by letting a stream of fast electrons come to a sudden stop at a metal plate; it is believed that X-rays emitted by the Sun or stars also come from fast electrons.

Last updated: 04/2002

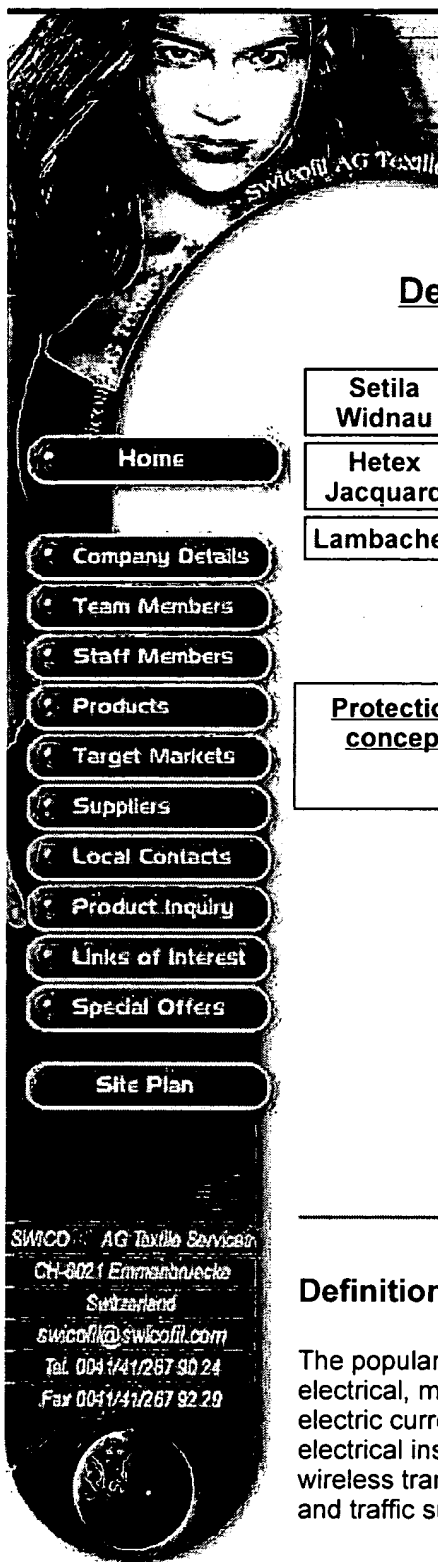
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Definitions and risks of electromagnetic waves

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Swiss Shield fabric against EMI - definition

<u>Protection concept</u>	<u>Private applications</u>	<u>Industry applications</u>	<u>Definitions + risks</u>	<u>FAQ</u>
	<u>Curtains</u>	<u>Fabrics</u>	<u>Canopy</u>	

Electromagnetic waves ...which are the risks?

Definition of the term

The popular-scientific designation "electro smog" is a comprehensive term for all electrical, magnetic and electromagnetic rays which arise everywhere where electric current flows or an electrical field exists. The most popular sources are electrical installations, main power lines, elevator systems, industrial plants, wireless transmitters, television and radio transmitters, mobile telephones, radar and traffic supervision etc

In many structural objects such as medical practices, hospitals, banks, insurance, industry, authorities, computing centers etc. exist risks for the health of humans, for processing and data security, the risks for disturbance of the enterprise or the technical devices.

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Depending on strength of the electromagnetic waves and depending on the degree of sensitivity of the individual to such radiation the well being and the health are impaired. Until today there are no reliable scientific studies on possible long-term damage, caused by electromagnetic waves.

However, more and more people do not want to wait for these results and they have started to protect themselves in their homes against such kind of radiation. They also expect that the same kind of precautionary measures are taken in public buildings. It is extremely important to protect humans in hospitals from the exposure to the damaging electric fields. In future more and more hotels will be offering protected rooms for their guests.

**Risks for technical devices**

The regulations and the possibilities of equipment protection against disturbing electromagnetic waves always limp remarkably behind the technical development and the rapidly growing electrification of our daily life. The omnipresent handy and handy antennas increase the risks for technical devices and installations. In intensive care areas as for example in hospitals or laboratories there are many electronic devices for diagnostics, monitoring, treatment etc. Disturbances from any source will have catastrophic consequences.

Risks for data processing

Unexplainable disturbances of computers and networks belong to the everyday life. The awareness regarding the risks of electro magnetically perturbing fields is growing among the responsible persons.

Risks for data security

IT equipment is relatively easy to protect from outside disturbances. In England several cases of data terrorism (blackmail) have become known.

A topic of growing importance is the data security against espionage . Most computer screens, graphic cards and video maps can be easily tapped within a distance of 30 - 100 meters. The more sensitive the data which is processed the higher the risks.



Swiss Shield® first-class textile shielding performance

Areas must be shielded in a way that disturbances from the outside are prevented and that perturbing fields from within the building are kept confined. A classical Faraday' cage reduces electromagnetic fields ten thousand to a hundred thousand times. It would be extremely difficult and costly to build a room lined with metal sheets and special openings. However in most cases it is sufficient to reduce the electromagnetic waves to the tenth or to the hundredth. Swiss Shield® products offer simple, uncomplicated and nevertheless highly effective protection - they are economically feasible, flexible in application and aesthetically ok.

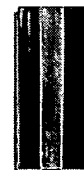
Swiss Shield® curtains

Electromagnetic rays enter rooms easily through windows. Translucent light curtains produced in the Swiss Shield concept and mounted in front of single windows or along the entire wall to the outside prevent electro smog effectively. Humans are efficiently protected from electromagnetic waves.



Swiss Shield® partial curtains

Partial screens (e.g. space divisors, outside and inner wall screens) can be used in a versatile and individual ways to protect yourself. Mounted by specialists Swiss Shield® partial screens guarantee optimal protection from electromagnetic fields.



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Definition for: **electromagnetic field**

(EMF).A field of force, produced by electric charges and currents, which has both an electric and a magnetic component and contains electromagnetic energy.The properties of electromagnetic fields were outlined by Scottish physicist James Clerk Maxwell in 1865.

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